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ABSTRACT

This report presents the results of an effort to translate future-oriented research and other thinking into a structured set of program goals for National Institute of Education (NIE) consideration. A variety of societal trends are presented to illustrate the conclusion that new roles of education and educational R&D are of central importance to the achievement of a desirable future. Educational problems and needs that were culled from a variety of sources are categorized as being either chronic, acute, or adaptive in nature. The reasoning underlying this approach is that while chronic problems need some attention and acute problems seem most demanding, the prevention of problems from becoming acute should be a key consideration in R&D programming. The importance of adaptive problems (the stresses resulting from the rapid rate of change in virtually all sectors of society) is that they offer identifiable areas that have not yet, but that are likely to, become acute without corrective attention. The main body of the report concludes with a set of goals derived from 21 selected problems and an outline of work proposed for the remainder of a 3-month effort. Supporting analyses are presented in several appendixes. (Author)



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A NEEDS ASSESSMENT FOR EDUCATIONAL R&D

O. W. Markley, Dorothy McKinney, and Dan L. Rink

Educational Policy Research Center

Note: This is a first draft of a hasty analysis effort. Criticisms and suggestions are invited.

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
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Executive Summary

This report presents the results of a three-week effort to translate the ongoing future-oriented research of the SRI/EPRC and other thinking into a structured set of program goals for NIE consideration.

The rationale underlying our selection of such goals (and the later development of corresponding program alternatives) rests on the perceptions that: (a) the anticipation of future problems which have not yet become acute is a necessary part of R&D planning, given the long lead-time required before R&D products become mature; (b) many of the most critical problems of education and society are systemic in nature, hence are intractable by conventional piece-meal approaches; and (c) coordinated multi-agency and public-private approaches are likely to be increasingly necessary for the resolution of education-related problems and goals.

A variety of societal trends and possibly corrective responses that have an educational component are presented to illustrate the conclusion that new roles of education and educational R&D are of central **importance** to the achievement of a desirable future. Educational problems and needs that were culled from a variety of sources are categorized as being either chronic, acute, or adaptive in nature. The reasoning underlying this approach is that while chronic problems need some attention, and acute problems seem most demanding, the prevention of problems from becoming acute should be a key consideration in R&D programming. The importance of adaptive problems (the stresses resulting from the rapid rate of change in virtually all sectors of society) is that they offer identifiable areas that have not yet but are likely to become acute without corrective attention.

The main body of the report concludes with a set of goals derived from 21 selected problems and an outline of work proposed for the remainder of a 3-month effort. Supporting analyses are presented in several appendices.

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- B. Problem worksheets (28 pages)
- C. Listing of issues selected from Congressional Hearings,
by Anne Daley and Harry Kincaid (13 pages)

A NEEDS ASSESSMENT FOR EDUCATIONAL R&D

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Introduction

Scope of Work

The NIE Planning Unit has invited the SRI/EPRC and several other policy research organizations to assist with the development of program initiatives that NIE might support. Each group was told not to seek comprehensiveness, but rather to translate the most important insights that resulted from their work to date into a form that would be most useful to the NIE Planning Unit. The analytical approach to be used was set forth in a memorandum "Specifications for NIE Planning Contracts," in which four task elements were defined: (1) the development of an ordered goal structure, identifying target groups affected by the achievement of these goals; (2) a description of the state of the art relating to manipulable variables through which these goals might be achieved; (3) the specification of program alternatives for NIE that are responsive to conclusions reached in the first and second task elements; and (4) the development of a funding strategy and support priorities to help guide the selection of program initiatives.

This paper addresses the first of these tasks, and suggests how the remaining work might be approached. Its central objective is to develop a structured set of educational problems/needs/goals from which program alternatives for NIE can be developed; these are based to a great extent

on the future-oriented educational policy research that has been conducted by the SRI/EPRC.*

Some Conclusions about the Future

A systematic investigation by the SRI/EPRC concluded that of some forty plausible alternative future histories, only a small fraction seem desirable, and that each of these few cases is unlikely to be realized without pervasive changes in the operative values of the culture and a reunification of the nation around the solution of its problems. A central reason for this sobering conclusion is the observation that while it is commonly recognized that most contemporary societal problems are interrelated, their import can more readily be grasped if they are viewed--not as individual problems--but as a network of social forces. These forces result from the combination of such circumstances as proliferating knowledge and affluence, industrial/technological development unmoderated by either the will or the ability to consider the well-being of the larger society, rising population and resource utilization levels, and an expanding have-have not gap, both between nations and within the U.S.A.

If this conclusion regarding the essentially systemic nature of the more pressing societal difficulties of our time is valid, the role of education is of central importance for the achievement of a desirable future. The needed changes cannot be manipulated by top-down strategies of management, but must come by means of an aware and skilled infrastructure in society, one that understands the various threats facing society and yet has the courage, the will, and the skill to make the

* Representative reports of this research (all available from the SRI/EPRC, Menlo Park, CA 94025) are:

W. W. Harman, "Alternative Futures and Educational Policy"

W. W. Harman and Mae Rosenberg, "The Most Critical Problems Facing Education Today"

W. W. Harman and T. C. Thomas, "A Crucial Role for the National Institute of Education"

O. W. Markley, D. L. Curry, and D. L. Rink, "Contemporary Societal Problems"

O. W. Markely, "Alternative Futures: Contexts in which Social Indicators Must Work"

R. F. Rhyne, "Projecting Whole-body Future Patterns - The FAR Method"

necessary changes--painful though they will be--in order for the democratic order to remain viable. It means that although fragmented and piece-meal approaches will continue, it is essential that new types of collaborative multi-agency and public-private approaches, aimed at systemic reform, also be launched.

In more specific terms, the following representative trends and corrective societal responses appear relevant to NIE planning:

<u>trend</u>	<u>corrective response</u>
unregulated growth of consumption of physical commodities	ecological sensitivity, broadly defined, involving appropriate regulation of industrial growth and attitudes of moderation
accelerating rate of change in society, symptoms of "future shock"	"recurrent" education, teaching of generalized and flexible problem-solving, and other "higher level" skills (as defined in problem Ad-5, Appendix B)
transition from an industrial, production-oriented society to a post-industrial, service-oriented society	development of new social institutions and career patterns less tied to a production-oriented economy
financial squeeze on schools and militant teacher unionism	same as above, with humane application of highly cost-effective educational technology
over-abundance of trained manpower for conventionally defined jobs (especially in education)	same as above, with training that is "generically" rather than specifically oriented
increasing dissidence from constituent groups outside the mainstream of society (both "have nots" and "have lots")	increasing pluralism with an emphasis on cultural unity through constructive change--especially as regards multi-cultural approaches to education for the disadvantaged

increasing "consumer advocacy" and distrust of "the enlightened paternalism of elites"

institutional reform offering increased consumer choice of basic alternatives (including public education)

increasing concern about planetary problems and national isolationism and/or national security

a shift from deterrence by force and economic domination to planetary collaboration (possibly fostered by multi-national educational institutions)

Although there is little controversy regarding the basic validity of these trends, considerable disagreement exists regarding how immediately they must be dealt with. Therefore it is essential that Federally sponsored R&D in education and related areas reflect these realities.

Research Method and Rationale

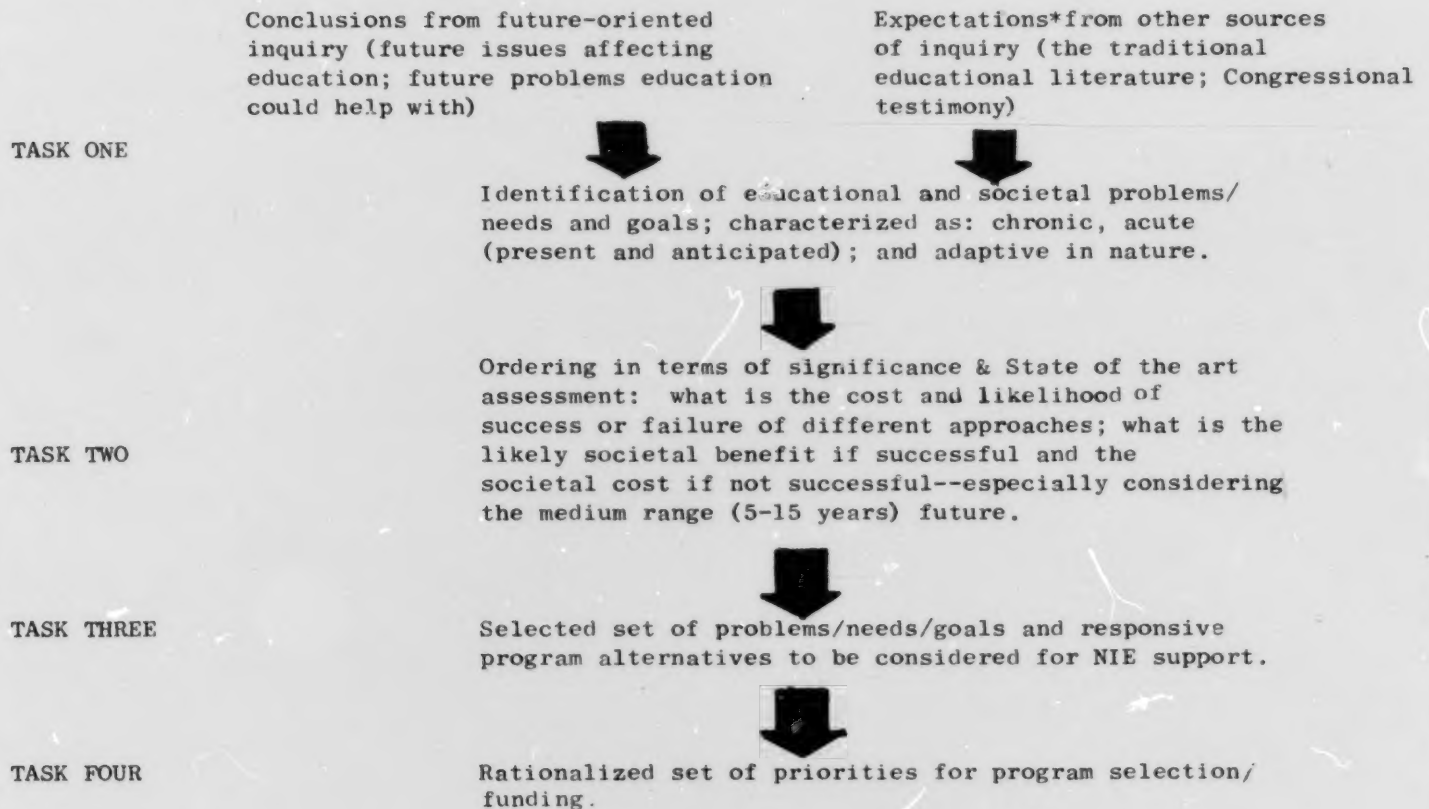
Rationale

The overall approach and rationale that we are pursuing for the development and selection of NIE program initiatives is diagrammed on Chart 1. The thrust of this approach (using the language of "facet analysis") is to determine the {gain/loss} of societal well-being that might result if the {need/problem/goal} {is/is not} adequately dealt with in an {anticipatory/crisis-oriented} mode. To accomplish this, it is necessary to identify emerging problems whose future resolution will need the products of long lead-time research. Toward this end we have found it useful to distinguish between chronic, acute, and adaptive problems.

Chronic problems (or goals or needs) are those that seem to have existed in the past and are expected to exist in the future. Since societal conditions vary, the amount of attention paid to a given chronic problem changes over time. Currently salient examples are the seemingly inadequate competence of many teachers, and insufficient knowledge of the learning process.

CHART 1

RATIONALE FOR DEVELOPMENT OF NIE PROGRAM SELECTION



*Expectations that are different from what R&D has been tasked with or delivered previously.

Acute problems are those which appear to be of critical immediate importance, either due to public perception and/or political definition, or due to systematic analysis by relevant experts. Current examples include education for the disadvantaged, and disaffection with education among various youth constituent groups (leading to discipline problems, absenteeism, and dropping out).

Adaptive problems are more difficult to define, but essentially concern the difficulties (for both persons and institutions) that stem from the accelerating rate of change that is experienced by virtually all sectors of society. The growth of an obsolescent work force, and the various pathologies that Toffler labeled "future shock" are but two illustrations of adaptive problems. The importance of this concept for policy planning and R&D programming stems from the recognition that most adaptive problems are the results of systemic changes in society, and that if they are not identified and appropriately dealt with, they are likely to become acute in ways that effectively prevent systemic approaches from being applied without enormous societal disruption or investment of resources.

It is a truism that most educational R&D in the past has oriented itself primarily to the solution of chronic problems of education. Where acute problems were attacked, they tended to be researched in parallel with crisis-oriented operational programs, hence little opportunity existed to realize the benefits of mature R&D products before societal disenchantment with institutional solutions set in.

The general approach, then, is (1) to structure important education-related problems, needs, and goals in terms of these three constructs; (2) to analyze them in terms of their "down stream" significance to education and society (considering the state of the art and the welfare of target groups); and (3) to identify specific areas and high leverage approaches for immediate investigation. (It goes almost without saying that the traditional concerns and methods of educational R&D programming should continue to be supported at some level. The present approach was selected to assist NIE to more

adequately meet the demands for educational R&D that makes a difference in the resolution of the difficult problems facing education and society.)

Research method for Task I

The needs assessment of Task I was conducted in three steps: (1) listing of issues relating educational and societal problems/needs/goals (present and future); (2) rank ordering of listed issues; and (3) development of selected issues into goals for educational R&D.

The initial list of problems was drawn from relevant congressional testimony, the literature relating to the history of education (seeking changing "phases" or patterns of educational and educational R&D practices and objectives), the literature relating to short-comings of past educational R&D practice, and the literature relating to problems of the future. The composite list is presented in Appendix A; a listing of selected items from Congressional testimony in Appendix C.

Since more problems were identified than could feasibly be developed given the available time and expertise, the list was divided into three priority rankings.

The first rank contained those issues that we considered most important, that similar efforts by others might not cover, and about which we had developed some knowledge. The second rank contained items that would have been developed if we had had sufficient time, or that we might develop if similar efforts by others should be found not to cover them. Problems in the third rank were considered as being of less immediate importance. The rankings of the composite list are also given in Appendix A.

The development of the selected issues took the form shown on the sample work-sheet (page 8). The aim of the documentation section of the work-sheet was not to be inclusive, but rather to point to one or two principal sources likely to be most useful in the state of the art assessment (task II), or to provide immediate support for points made in the analysis section. Both the

Flexible Problem Solving Skills in Real-World Situations

Adaptive

Levien Program Area I

Problem Description

If students are to be adequately equipped to deal effectively with the rapidly changing problems and environment of the future, and if society is to enjoy a competent infrastructure, the development of suitable problem solving skills is of crucial importance.

Documentation

Especially salient works are:

Harman, W. W. "Alternative Futures and Educational Policy" Menlo Park, Calif.: Stanford Research Institute, 1970 (dealing with why this concern is of vital importance from a futures perspective).

Michael, D. N., "The Unprepared Society: Planning for a Precarious Future." New York: Basic Books, 1968 (dealing with the importance of focusing on the training of youth elites in flexible problem solving skills).

Coleman, J. C., "The Children have outgrown the schools." Psychology Today, Feb. 1972 (dealing with the changing kinds of extra-school experiences and needs that youth of today have; concluding with a rationale for education that provides direct, not vicarious experience, the ability to integrate diverse kinds of information, and to practice problem solving in a variety of meaningful environments).

Analysis

From a variety of perspectives there is a clear-cut need for educational practices that offer direct rather than vicarious, extra-school rather than intra-school, and generalized rather than specialized learning experiences. The history of the progressive education movement indicates that these objectives will be difficult to realize; the experience of various work-study programs indicates that the approach of more or less simply putting the student into the adult world of work as conventionally defined is an unsuitable one for these purposes. Serious study therefore needs to be undertaken, both of the history of the progressive education movement, and of presently feasible approaches which have promise as ways to provide these kinds of educational experiences and skills.

Goals

- To increase the degree to which conventional educational practice can feasibly provide educational experiences which lead to flexible problem solving skills in the real-world and in environments which are unfamiliar.
- To identify the principal variables on which effective flexible, or generalizable problem-solving skills are based, and how they can best be imparted to different types of students.

documentation and the analysis sections were provided to clarify the cryptic statement of the goals that were developed.

All of the worksheets developed to this point are presented as Appendix B.

One final comment about the approach. The identification and discussion of goals for education and educational R&D, exclusive of operational programs by which these goals might be achieved necessarily means that goals which are apparently conflicting will be developed. A good example is the need for education to contribute to more effective enculturation (the teaching of and socialization into the traditional culture) on one hand, and more effective acculturation (the teaching of culture-changing reforms that deal with emergent societal problems) on the other. Additionally, many goals were developed which necessarily will remain at a high level of abstraction (e.g., the goal of teaching "higher level skills" or of providing equal educational opportunity) until the succeeding tasks (state of the art assessment and development of program alternatives) are completed.

Selected Problems and Developed Goals

Below are listed the education-related problems that we chose to develop, and the corresponding goal statements. In each case a designation as to the one or more NIE Program Areas* in which they most closely fall are listed in order to facilitate insertion into the ongoing work of the NIE Planning Unit. Where the meaning of either the problem label or the corresponding goals is unclear, the reader is referred to the relevant worksheet in Appendix B where--although brief--the issues are developed at more length.

* The Program Areas referred to are those designated by Levien's report, "National Institute of Education: Preliminary Plan for the Proposed Institute." They are: (I) Alleviating Major Educational Problems
(II) Advancing Educational Practice
(III) Strengthening Education's Foundations
(IV) Strengthening the R&D System

Chronic Problems

1. Broad conflict over goals, practice, and nature of education (Levien program area I)
 - To develop an informed educational statesmanship in order that much of the conflict can take place in the political and public arena rather than in the schools themselves.
 - To develop more competent educational leadership on all levels.
 - To create sufficient diversity in order that the different needs of different groups can be met without destructive conflict.
2. Inadequate linkage of R, D, & A in education (Levien program area IV)
 - To strengthen the linkage between R, D, & A.
 - To develop a market mechanism for the delivery of R&D services to consumers at the local level.
3. Inadequate use of knowledge from related fields (Levien program area III)
 - To obtain more information regarding the past successes and failures of multi-disciplinary research and the identification of the causes therein.
 - The fostering of multi-disciplinary research teams in educational R&D.
4. Ineffective use of educational resources (Levien program area I)
 - To examine cost-benefit relationships inherent in present uses of educational resources.
 - To research the possibilities of new technologies for education.
 - To discover economies of scale, and so on, which might be useful within the present school system; and differentiate between economies which are appropriate for different teaching-learning environments.
5. Lack of competent educational leadership at all levels (Levien program area II)
 - To obtain knowledge about the circumstances which develop and encourage (or discourage) leadership in education.

6. Needs of special groups (Levien program area II)

- To gear the educational system to handle the special needs of certain segments of the population.
- To develop specialized capabilities in educational personnel to deal with specific local conditions.
- To develop resources and inputs for the special needs of localities.
- To examine the different roles appropriate to the formal educational system in different circumstances.

Chronic Problems possibly becoming Acute

1. Lack of diversity of educational approaches (Levien program area II)

- To develop diversity within existing forms and structures of the school.
- To investigate alternatives to traditional schooling.
- To explore existing obstacles to diversity, such as state laws, standardized testing, etc.
- To meet the special needs of students of minorities (racial and ethnic), in isolated or rural areas, or the handicapped.

2. Inadequate training of R&D skills (Levien program areas II, IV)

- To broaden the definition of "R&D" as it is used in education.
- To develop additional models of training R&D related skills.
- To develop additional institutional mechanisms for R&D training.

Acute Problems

1. Equal educational opportunity (Levien program area I)

- To define the extent to which formal education is a determinant of life opportunity.
- To gear the educational system to handle the special needs of certain segments of the population.
- To determine the elements of individual competence and how school programs can contribute to their realization in students.
- To develop a variety of educational programs that build on student strengths and thereby enhance their potential.

2. Increasing the life opportunities of the disadvantaged (Suggested program area V)

- To explore transportability of existing successful compensatory programs.
- To critically examine the concept "disadvantage" and to investigate its characteristics.
- To explore the inadvertant classification of linguistic or cultural differences as inherent disadvantages.

3. Development of a tradition of "moral inquiry" in educational R&D
(Levien program area III)

- To increase understanding of how values and larger welfare considerations can more effectively become part of the policy and R&D process in education.
- To increase the ability of all actors in education-related fields to incorporate moral considerations into their problem solving activities.

4. Lack of student interest, commitment, dropouts, absenteeism
(Levien program area I)

- To define the terms "lack of student interest"; "dropout"; "absentee"; "lack of commitment" in other than subjective or emotive, non-quantifiable expressions.
- To devise a methodology for sampling the level of existence of these conditions throughout the student population.
- To identify and describe those individual and environmental causes of these conditions, including non-school causes and the interaction between personality and environment.
- To conceive, organize and test programs for relief of the condition that schools might carry out; to conceive and recommend programs for relief of the condition that other than school agencies should administer.

5. The relationship between education and employment-preparation for work.

(Levien program areas I, II)

- To define the extent to which formal education is a determinant of life work (employment) patterns.
- To describe in both quantitative and qualitative ways the manner in which school leavers enter the economy.
- To identify patterns of social and economic change (national and global) that impinge on the problems of labor force entry.
- To identify and describe personal and social attitudes about human economic function that do and will affect present and future labor force composition and performance.
- To consider the effects of probable technological change on labor force needs.
- To determine the extent to which the employer community (the determinors of employability) actually rely on the educational system to provide a trained work force.

6. Inadequate supply of diverse/competent educational R&D manpower

(Levien program area IV)

- To recruit and train an adequate supply of R&D manpower, through both schools of education and ongoing educational research projects.
- To foster research on the part of teachers and other staff in the field.
- To explore available manpower and research training potential of related fields.

7. Development of Multi-Agency Approaches to education-related problems
(Suggested program area V)

- To improve the state of the art and to develop a strong tradition of multi-agency approaches to education-related problems.
- To develop, if feasible, the Development of Multi-Agency Approaches as a major Program Area for NIE.

8. Erosion of commitment to scholarly inquiry (Levien program area I)

- To increase emphasis on critical thinking in college and especially graduate school, aimed not so much at vigorous scientism, but at critical reasoning and the development of conclusions about how to proceed in the face of relative ignorance.
- To increase emphasis on the rigorous study of real-world issues of apparent relevance to students.

Adaptive Problems

1. Critical societal problems and needs of the future (Levien program areas I, III)

- To increase the quality of research related to the identification and analysis of critical societal problems and needs of the future.
- To improve the state of the art in translating anticipated societal problems and needs into program planning and evaluation.
- To make educational R&D and educational practice more responsive to future societal problems.

2. Educational policy implications of "radical" discoveries
(Levien program area IV)

- To develop mechanisms and more adequate methods for systematically examining educational policy implications of "radical" discoveries.

3. Assessment and regulation of emerging psycho-technologies

(Levien program areas I, III)

- To develop the state of the art in psycho-technology assessment and regulation, especially as it relates to education.
- To foster knowledgeable public participation in the process of psycho-technology assessment and regulation.

4. Metaproblems having educational implications (Levien program area III)

- To sponsor inquiry on how best to relate meta-issues of society to educational policy considerations.
- To identify contending conceptions regarding the nature of man and society in the present and the future.
- To identify conceptions regarding the nature of man and society that have promise as ways to help unify society in a time of transition.

5. The development of "higher level" skills (Levien program area II)

- To identify the kinds of "higher level" skills with which citizens can avoid "future shock."
- To discover effective ways in which such skills can be learned.
- To establish appropriate ways for public education to teach politically sensitive concepts and skills.

6. Flexible problem solving skills in real-world situations

(Levien program area I)

- To increase the degree to which conventional educational practice can feasibly provide educational experiences which lead to flexible problem-solving skills in the real world, and in environments which are unfamiliar.
- To identify the principal variables on which effective flexible, or generalizable problem-solving skills are based, and how they can best be imparted to different types of students.

Alternative Approaches to Tasks II, III, and IV

As requested, the SRI/EPRC conducted the analysis specified for Task I independently of either the NIE Planning Unit or other contractors. Although it is not clear that it would be advantageous to do so, one approach would be to continue this arrangement for the remaining tasks.

A second approach would be to conduct a planning conference in which all of the goals identified by the various groups participating in Task I would be discussed, prioritized, and assigned for development into program alternatives, each group working independently.

A third approach would be for the SRI/EPRC team (as well as others) to work more intimately and over a longer period of time with the NIE Planning Unit--partly at the NIE Planning Unit's location in Washington, D. C., and partly at SRI's California facility.

Regardless of which approach is selected, a tentative outline of our final report (as requested by the Specifications Memorandum) is as follows.

- I. Introduction and statement of work
- II. Analysis of selected goals for educational R&D
 - A. past history of attempts to realize the goal
 - B. approaches that have and have not proved successful
 - C. approaches or strategies that seem promising
- III. Development of program alternatives for NIE
 - A. The operating context of NIE, and implications for its management
 1. The societal context (the U. S. A. and the world)
 2. The institutional context (the Congress, HEW, and USOE)
 3. The client context (the public educational system)
 4. The temporal context (the past, present, and future)
 5. Future influences on educational policy
 - B. The development of program alternatives that meet contextual constraints and are responsive to identified goals/needs/problems

IV. Selection of suggested program initiatives

A. Criteria imposed on the selection process

B. Selections thus made

Appendix A

Below are listed the problems or needs that were considered in the needs assessment. The rankings refer to their relative priorities as described in the main text (all rank "1" problems are developed in Appendix B, and indicated by categories: C(Chronic), A(Acute), Ad(Adaptive), and number).

I. Chronic Problems

Rank Levien program area I

- | | |
|---|--|
| 3 | Parental concern and revolt against disruption, controversial practice, and youth culture. |
| 3 | Poor quality of education generally. |
| 2 | Reading. |
| 2 | Unintended psychological consequences of schooling. |
| 2 | Widespread teacher frustration. |
| 1 | Broad conflict over purpose, goals, and nature of education. (C-1) |
| 3 | The role of schooling in education. |
| 1 | Ineffective use of educational resources. (C-4) |

Levien program area II

- | | |
|---|---|
| 1 | Lack of competent educational leadership at all levels. (C-5) |
| 2 | Lack of professionalization among teachers. |
| 2 | Lack of competence among boards and administration. |
| 2 | Poor teacher training. |
| 2 | Administrative structure problems. |
| 1 | Lack of diversity of educational approaches. (C-to-A-1) |
| 2 | Lack of role models. |
| 2 | Inadequate graduate and professional education. |
| 3 | Outmoded fact/knowledge curriculum. |
| 2 | Problems of educational renewal. |
| 2 | Teacher drop-out problem. |
| 1 | Needs of special groups. (C-6) |
| 2 | Affective climate of classroom. |
| 2 | Accountability. |
| 1 | Inadequate training of R&D skills. (C-to-A-2) |

Rank Levien program area III

- 2 Triviality and parochial simplicity of educational theory.
- 2 Inadequate outcome evaluation.
- 3 Lack of a strong historical record.
- 2 Lack of knowledge about crucial classroom variables and effective teaching.
- 3 Lack of knowledge about learning.
- 1 Inadequate use of knowledge from related fields. (C-3)
- 2 Inadequate political science knowledge base relating to educational renewal.

Levien program area IV

- 1 Inadequate linkage of R, D, & A in education. (C-2)
- 2 Inadequate testing and evaluation of programs and innovations.
- 2 Incentives regarding risk taking and innovation.
- 1 Inadequate training of R&D skills. (C-to-A-2)

Suggested program area V

- 2 International education.

II. Acute Problems

Levien program area I

- 1 Lack of student interest, commitment, dropouts, absenteeism. (A-4)
- 1 Equal educational opportunity. (A-1)
- 3 Financial problems.
- 1 Erosion of commitment to scholarly inquiry. (A-8)

Levien program area II

- 1 Relationship between education and employment preparation for work. (A-5)

Levien program area III

- 1 Development of a tradition of "moral inquiry" in educational R&D. (A-3)

Levien program area IV

- 1 Inadequate supply of diverse/competent educational R&D manpower. (A-6)
- 2 Poor dissemination of knowledge and information.
- 2 Conflicting notions of the appropriate R&D model.

Suggested program area V

- 1 Increasing life opportunities of the disadvantaged. (A-2)
- 1 Development of multi-agency approaches to education-related problems. (A-7)
- 2 Integrated community services.
- 2 Separation of student from society.

III. Adaptive Problems

Levien program area I

- 2 Racial and political radicalism in schools.
- 3 Divisive effects in terms of values and opportunities.
- 2 The relationship between schools and society.
- 2 Societal needs/goals and educational practice.
- 1 Flexible problem-solving skills in real-world situations. (Ad-6)
- 1 Assessment and regulation of emerging psycho-technologies. (Ad-3)
- 1 Critical societal problems and needs of the future. (Ad-1)

Levien program area II

- 3 Lack of educational statesmanship.
- 1 The development of "higher level" skills. (Ad-5)
- 2 Inadequate preparation for the work force.

Levien program area III

- 2 Lack of knowledge about "higher level" skills that are needed.
- 2 Lack of knowledge about effects of mass media.
- 2 Lack of integration between technology and education and inadequate use of existing technology and hardware.
- 1 Metaproblems having educational implications. (Ad-4)
- 1 Assessment and regulation of emerging psycho-technologies. (Ad-3)
- 1 Critical societal problems and needs of the future. (Ad-1)

Levien program area IV

- 1 Educational policy implications of "radical" discoveries. (Ad-2)

APPENDIX B

Problem Worksheets

Problem Worksheet C-1

Broad Conflict Over Goals, Practice, and Nature of Education

Chronic

Levien Program Area I

Problem Description

Education is in turmoil, seems unable to reform itself, partly due to "the state of the art" but also to a conflict over the goals, practice and the nature of education.

Documentation

"Underlying the demise of the current /educational reform/ movement... has been its inability to face and resolve various unexamined conflicts among leading reform proposals, such as those for compensatory education, integration, decentralization, community control, radical pedagogical reform, and teacher professionalism." (Katz, Michael, "The Present Moment in Educational Reform, Harvard Educational Review, August 1971, p. 342)

"...One problem that lies at the root of many (indeed, nearly all) other educational problems is a fundamental disagreement over what education is and how it is best accomplished. This is not a superficial disagreement, but one that lies deeply embedded in fundamental concepts." (Davis, Bob, "Program Proposals for Improving the Quality of Educational Experiences," paper submitted to the NIE Planning Unit, December 1971, pp. 24-25)

"It is obvious from our findings that if the continued existence of schools were dependent upon consensus on educational goals among teachers and their constituencies of mothers and students, the schools would not survive." (Wilder, David E. and others, Actual and Perceived Consensus on Educational Goals between School and Community, OE Contract Report, December 1968)

Analysis

Lack of agreement on educational goals and practice or on the nature of education itself is a perennial condition, and is not necessarily harmful. The problem arises when that lack of agreement leads to broad conflict that taxes the time and energy of educators, brings about a stalemate in educational reform, leads to policies or programs which undermine the capacity and morale of teachers, or decreases public confidence in the educational system. Education is swept first one way and then another by changing moods, caught between legislative mandates and an aroused public, pressured to reform itself in opposing directions by opposed interest groups, without my clear perspective on how it can or should reform itself.

Problem Worksheet C-1

Broad Conflict Over Goals, Practice, and Nature of Education (Continued)

Goals

- To develop an informed educational statesmanship in order that much of the conflict can take place in the political and public arena rather than in the schools themselves.
- To develop more competent educational leadership on all levels.
- To create sufficient diversity in order that the different needs of different groups can be met without destructive conflict.

Problem Worksheet C-2

Inadequate Linkage of Research, Development and Application in Education

Chronic

Levien Program Area IV

Problem Description

Many of the problems that prevent federally sponsored R&D in education from being useful at the applied level are believed to stem from the fact that there is over-much specialization and inadequate linkage of the various parts of the "linear" R&D cycle.

Documentation

The communication of most research results is oriented more toward professional colleagues than toward potential consumers. (Gideonse, H. D., Educational R&D in the United States, USOE, 1969)

When asked, most applied personnel at the local level claim to rely most on face-to-face contact and least on published research studies as the source of ideas for innovation in the public schools. (Rittenhouse, C., "Innovation Problems and Information Needs of Educational Practitioners," Stanford Research Institute, Menlo Park, California, May 1970)

R. Havelock has presented several different models which stress the importance of this linkage, and how it might be strengthened. (Havelock, R., "Planning for Innovation," University of Michigan, 1971)

Analysis

The educational development network being established by USOE offers potential to increase the effectiveness of the linkage between R&D and application in public elementary and secondary education, but it is not clear that this network will survive either the coming of a new Commissioner or the displeasure of the Congress regarding the lack of authorizing legislation.

Where the profit motive is an essential part of linking research to application (e.g., in the pharmaceutical industry) "linker personnel" (e.g., the drug retailers) are assigned to key linkers in the cycle, and other organizational structures are invented as needed. This suggests that one possible approach would be to foster the development of a market mechanism for the delivery of applied R&D services to local educational agencies.

Goals

- To strengthen the linkage between research, development and application
- To develop a market mechanism for the delivery of R&D services to consumers at the local level

Problem Worksheet C-3

Inadequate Use of Knowledge from Related Fields

Chronic

Levien Program Area III

Problem Description

Education, as all disciplinary specialities, tends to isolate itself from relevant knowledge outside its special domain, in spite of the need for such knowledge.

Documentation

Cronbach and Suppes discuss this problem and outline paths for future research. As this is a much discussed problem, undoubtedly other literature is relevant. (Cronbach and Suppes, Research for Tomorrow's Schools, New York, MacMillan, 1969, pp. 256-271)

Analysis

Much of the recent experience with university-based multidisciplinary research by persons with a basic research orientation has proven very unsatisfactory. It is not clear whether the answer lies more with more adequate training, or with federal targeting of research objectives (either basic or applied, conclusion-oriented or decision-oriented) which would tend to force investigations in areas where no one disciplinary speciality would suffice.

Given the scarcity of research funds in general, a danger to be avoided would be "the more the better" as regards general cross-disciplinary research efforts. The task would seem to be one of insuring the asking of significant questions and the development of multidisciplinary research competence by teams rather than by individuals.

Goals

- To obtain more information regarding the past successes and failures of multidisciplinary research and the identification of the causes therein.
- To foster multidisciplinary research teams in educational R&D

Ineffective Use of Educational Resources

Chronic

Levien Program Area I

Problem Description

With the current financial squeeze in education there is a need for more effective utilization of resources.

Documentation

"School systems must employ continuously the results of cost-benefit and cost-effectiveness analyses in order to allocate effectively the resources available to education." (Innovation in Education, Committee for Economic Development, p. 13) "The pressure of enrollments nationally is declining and the general supply of teachers is increasing at the same time that analytical techniques for better allocation of school resources are becoming available. Now that they are released from the struggle to absorb large numbers of additional students, many schools have the opportunity to make serious efforts to decide on programs of high and low priorities." (p. 19) "If the quality of schooling is to be raised at a cost that is acceptable in terms of present school expenditures, a breakthrough is required in instructional procedures and instructional organization." (p. 28)

"Since vast resources are being placed at the disposal of educational authorities, there is a heightened interest in the increased effectiveness which these resources are supposed to produce." (Morphet, E. L. and C. O. Ryan, Planning and Effecting Needed Changes in Education, Citation Press, New York, 1967, p. 311.)

Analysis

"The history of economic activity indicates that improvements in the allocation of resources under existing technology yield significant but not major advances in productivity. Hence, while we strongly urge the development and use of educational systems, we also maintain that truly impressive gains in output will occur as and only as school districts make innovations in their programs." (Innovation in Education, CED, P. 61)

A more effective use of educational resources requires both research into present uses and resulting costs and benefits, and possible alternate uses; as well as research into new technologies, organization, and so forth which might radically alter the range of available alternatives in use of resources for education.

Goals

- To examine cost-benefit relationships inherent in present uses of educational resources.
- To research the possibilities of new technologies for education.
- To discover economies of scale, and so on, which might be useful within the present school system; and differentiate between economies which are appropriate for different teaching-learning environments.

Lack of Competent Educational Leadership at All Levels

Chronic

Levien Program Area II

Problem Description

The increasing demands from many sources upon educational leaders--testing their flexibility and creativity--require more systematic and effective approaches to their selection and development.

Documentation

"The first and foremost factor in planning and effecting needed changes in a school is that of developing creative and committed leadership." (Morphet, E. L. and C. O. Ryan (Eds.), Planning and Effecting Needed Changes in Education, 1967, p. 166)

"With few exceptions, the furnishing of stimulation and direction by state department personnel is more of a hope than a reality. In many states these personnel are too few in number and too overburdened with other duties to exert much leadership. ...One explicit objective...should be a substantial strengthening of the instruments of educational leadership at the state level." (Ibid, pp. 189, 154.)

"The city and suburban areas of 1980 will find themselves in a state of hopelessness as far as effective educational improvements are concerned, unless educational leadership assumes a more influential position in the city and suburban arrangement." (Ibid, p. 232)

Edward Nyquist suggests "the allocation of high priorities to leadership activities rather than to regulatory and supervisory functions necessary as the latter are." (Ibid, p. 310)

Analysis

Educational leadership at all levels within the educational system is called upon to deal with the following: (1) to facilitate consideration and adoption of innovations, (2) to cope with the immanent changes (e.g., the influx of federal funds, intra-state levelling up, etc.), (3) to provide coordination between levels which is presently lacking, (4) to change the public image of the schools (for such ends as recruitment of more competent people into the teaching profession, increasing community-school cooperation, and so forth).

In order to develop this leadership, the appropriate role for NIE seems to be one of collecting data on successful and unsuccessful ways of (a) recruiting potential leaders, (b) training them, (c) fostering their leadership potential, and (d) letting them be effective. Analysis of such data might well lead to possible national strategies for developing educational leadership, as well as suggestions for state and local educational authorities (the latter, however, are often more effective if developed locally).

Goal

- To obtain knowledge about the circumstances which develop and encourage (or discourage) leadership in education.

Problem Worksheet C-6

Needs of Special Groups

Chronic

Levien Program Area II

Problem Description

The educational establishment must serve the diverse needs of special segments of the population: urban, rural, suburban, central city, and so forth; also, many ethnic and other special-interest groups with their unique problems, the handicapped, etc.

Documentation

The lack of preparation of outside administrators and teachers who come into rural areas results in their superficial acceptance but a deep resentment on the part of the students and the community. (Bowkett, Norma S., "An Assessment of Educational Needs in Alaska, ED 054888)

Rural people place a traditionally low value on education (formal), and are highly suspicious of 'foreign' ideas, suggestions or assistance. (Hughes, Larry W. and D. L. Spence, "Attitudes and Orientations of Rural Groups and Effects on Educational Decision-making," ED 054892)

Minority groups are alienated from education by white middle class emphasis and focus. (Schmidtlein, Frank A., The Programs of the 15 Regional Educational Labs," Journal of R&D in Education, 3, (2), Winter 1970, pp. 18-38.) Black students receive inferior and irrelevant education due to 'white-washing.' Mexican-Americans get labelled mentally handicapped or retarded because of the language difference. Indian children divorced from their culture grow up to join an adult population with the highest poverty, unemployment, alcoholism, and crime rate of any ethnic group in the U.S. Rural students lose their best teachers to higher paying school districts, have limited educational investment and development because of poverty and conservatism.

Analysis

The existence and social and political salience of many subgroups in our society makes it desirable that the school deal in some fashion with their special needs. Teachers and administrators must be trained especially to work in differentiated areas and/or recruited from the areas themselves. Curricula and teaching methods should be developed that take advantage of the special capabilities and lacks of the target populations. Differential financial and other input needs of these areas must be investigated; also, different educational outputs, with particular local significance, must be allowed for.

Problem Worksheet C--6

Needs of Special Groups (Continued)

Goals

- To gear the educational system to handle the special needs of certain segments of the population.
- To develop specialized capabilities in educational personnel to deal with specific local conditions.
- To develop resources and inputs for the special needs of localities.
- To examine the different roles appropriate to the formal educational system in different circumstances.

Lack of Diversity of Educational Approaches

Chronic → Acute?

Levien Program Area II

Problem Description

Our present educational system exhibits a high degree of uniformity, despite regional, ethnic, and other differences in the population. "Our present educational system is unable to cope effectively with diversity." (Davis, p. 11)

Documentation

"The reasons for creating diversity are both numerous and compelling": (1) to deal with the goal dissensus, and (2) "One of the clearest facts about students is that different students have different needs, different strengths, and different weaknesses, different responses to any specific kind of experience or situation." (Davis, p. 21)

"I think that we have to broaden the range of opportunities, the forms of schooling available to individuals, so that they can sort themselves into the educational form that is relevant to their needs." Also, diverse paths, in substance and time, must be provided through education. (Levien, Hearings on NIE, p. 219).

"I would rather see a school that was constructed on the premise that a variety of points of view were represented within schools. In fact, the school curriculum should encompass all that is legal and sanctioned in society in its full diversity, including religious points of view, political points of view, various issues and points of view on morality." (Allen, NIE hearings, p. 88).

Analysis

The need for diversity, both to satisfy pluralistic goals and to deal with individual differences between students, is a very real one in our educational system today. This diversity should be developed in terms of many components of the system, including: (1) curricula, (2) teacher roles, (3) timing of school in relation to work/leisure, (4) alternative school organizations, (5) relationships of individuals to the system, and so forth.

Goals

- To develop diversity within existing forms and structures of the school.
- To investigate alternatives to traditional schooling.
- To explore existing obstacles to diversity, such as state laws, standardized testing, etc.
- To meet the special needs of students of minority racial and ethnic backgrounds or in isolated and rural situations.

Inadequate Training of R&D Skills

Chronic → Acute?

Levien Program Area II, IV

Problem Description

The training of research skills is almost always conceived in the academic-rigorous-science model. But effective educational renewal requires a broad range of research, development, and innovation skills which are not typically taught.

Documentation

The Far West Regional Educational Laboratory has established a consortium to teach broadly conceived R&D skills for educational professionals and para-professionals. Other similar efforts may be underway.

The literature that is relevant to this area needs to be surveyed as part of Task II.

Analysis

The university orientation regarding the training of all graduate students in academically oriented research is strongly entrenched and is not likely to be discarded. Additional models of training in R&D related skills are needed, as are alternate institutional mechanisms to do so.

Optimally every person involved in the educational enterprise should be considered a researcher, if the meaning of that term were suitably defined, and the teaching of appropriate skills made part of their training. As with other significant reforms in education, this has political implications, since meaningful R&D at the applied level inevitably leads to organizational stresses as new innovations are attempted.

Goals

- To broaden the definition of "R&D" as it is used in education.
- To develop additional models of training R&D related skills.
- To develop additional institutional mechanisms for R&D training.

Problem Worksheet A-1

Equal Educational Opportunity

Acute

Levien Program Area I

Problem Description

A variety of circumstances continue to prevent the attainment of educational opportunities to different students; these include: racial bias, regional and community disparities in financial resources, disparities in student SES and family situation, and so on.

Documentation

The Coleman Report (Equality of Educational Opportunity, OE-38001, 1966) is the most comprehensive report on inequalities in schools, both inequalities of input and unequal outcomes.

Another major source of documentation on this problem is the series of volumes resulting from the hearings of the U.S. Senate's Select Committee on Equal Educational Opportunity, U.S. Govt. Printing Office, 1970-

There is a need to "develop the art and science of education to the point that equality of educational opportunity results in satisfactory equivalence of achievement." (Moynihan, NIE hearings, p. 13).

Analysis

The concern about equal educational opportunity stems from the American tradition of equal opportunity, and the comparatively recent societal consensus that the responsibility for providing opportunity falls in large measure upon the schools. Presently, there are indications that equality of opportunity may be defined as equal educational outcomes, on the average, across racial, ethnic, and SES lines. Since the formal educational system depends on so many factors outside of its jurisdiction for results (as student background, motivation, etc.), such a definition would raise unfulfillable expectations, and result in further loss of faith in the public schools.

The appropriate role for the schools seems to be eliminating insofar as possible discrimination within the schools, and an effort to equalize (dollar) inputs to the schools. NIE can research the factors that contribute to equality of educational opportunity, and the ways in which different educational needs can be met.

Goals

- To define the extent to which formal education is a determinant of life opportunity.
- To gear the educational system to handle the special needs of certain segments of the population.
- To investigate to determine the elements of individual competence and how school programs can contribute to their realization in students.
- To develop a variety of educational programs that build on student strengths and thereby enhance their potential.

Increasing the Life Opportunities of the Disadvantaged

Acute

Suggested Program Area V

Problem Description

Eliminating the 'disadvantage' suffered by a segment of the population is a foremost national priority. To date, the main approach that has been tried is compensatory education.

Documentation

"At the same time that compensatory programs were being launched, new research began to suggest that in fact the familiar inputs of schooling and relatively little effect on pupil achievement, at least by comparison with the powerful effect of the life circumstances of the youngster. Disadvantaged boys and girls, 'born and raised in family and peer group surroundings not conducive to high' educational achievement, could not be expected to benefit very much from changes in factors that have little effect on achievement. By this analysis, compensatory programs, at least as they have been tried to date, could not realistically be expected to improve achievement -- although most of their critics agree that they have helped improve the health, nutrition, and socialization of disadvantaged boys and girls. Moreover, the discovery of the powerful educational effects of the first few years of life suggested that wholly different models must be tried -- and far more be learned about learning itself -- if equal education is to be afforded to the disadvantaged." Rpt. of the Natnl Goals R. Staff, p. 93.

See also the problem worksheet on unequal educational opportunity. (I,c)

Analysis

There is a very real question about the utility of the compensatory approach. Of 1200 compensatory programs evaluated by an OE study, 10 were considered successful. (Michael J. Wargo, et.al., Further Examination of Exemplory Programs for Educating Disadvantaged Children, 1971, p. iii) The task would therefore seem to be to explore the transportability of those successful programs, rather than to create a large number of new experimental programs. This relative lack of success suggests a much more critical view of the concept "disadvantage" and more basic research to illuminate the nature of the disadvantage.

Goals

- To explore transportability of existing successful compensatory programs.
- To critically examine the concept "disadvantage" and to investigate its characteristics.
- To explore the inadvertant classification of linguistic or cultural differences as inherent disadvantage.

Development of a Tradition of "Moral Inquiry" in Educational R&D

Acute

Levien Program Area III

Problem Description

It is increasingly questioned whether any scientific research can, in fact be "value-free". In the case of educational R&D, however, it seems clear that it cannot. The principal objective of publically supported education is to enhance the ability of citizens to function effectively within the social context of their time in ways that contribute both to their own well-being and to that of the society as a whole. As the objective of NIE is to assist the educational system in this task by means of educational R&D, this necessarily entails a high concern for how both the conduct of educational R&D and its products affect the larger well-being of both individuals and society. Thus educational research is (or should be) essentially a moral inquiry.

Documentation

A variety of books and articles have been written on the ethics of social scientific research, and various professions (but especially psychology) have well articulated ethical guidelines for the conduct of both research and direct services. (See, for example, C. E. Reagan, "Ethics for Scientific Researchers." Springfield, Ill.: C. C. Thomas, 1969, for a theoretical overview, case studies, and an annotated bibliography.)

A rather different, but relevant literature is to be found in the emerging field of policy science. (See especially G. Vickers, "Value Systems and Social Processes," New York; Basic Books, 1968; and C. W. Churchman, "The Design of Inquiring Systems," Berkeley, California: Space Sciences Laboratory, University of California, 1969)

Analysis

A great deal of confusion and ambiguity exists as to just how values or value-related issues can, do, or should relate to the conduct of "scientific" inquiry, and to whether "basic" versus "applied" or "conclusion-oriented" versus "decision-oriented" research is basically different as regards normative concerns. Similarly, confusion and/or conflict exists among professionals as to whether these kinds of concerns can be adequately dealt with by the methods of systems analysis, conducted by experts, or whether they are essentially political in nature, hence amenable only to participative approaches (which could include systems analytic procedures as one element). Although it is undoubtedly unrealistic to expect clear-cut resolutions to these issues, the principles of what might be termed "moral inquiry" (such as consideration of second and higher order consequences for the well being of individuals and society; and inclusion of relevant stakeholders in the research and research policy-making process) can nevertheless be incorporated into the conduct of NIE sponsored activities.

Problem Worksheet A-3

Development of a Tradition of "Moral Inquiry" in Educational R&D
(Continued)

Goals

- To increase understanding of how values and larger welfare considerations can more effectively become part of the policy and R&D process in education.
- To increase the ability of all actors in education-related fields to incorporate moral considerations (as defined above) into their problem solving activities.

Problem Worksheet A-4

Lack of Student Interest, Commitment, Dropouts, Absenteeism

Acute

Levien Program Area I

Problem Description

Students are required by law to remain in school for ten to twelve years. An increasing percentage find it economically necessary to continue as students for two, four, or even more years. Persuasion by legal and exhortatory means are employed to persuade students to remain in school, although these means are increasingly successful in the gross statistical sense there is evidence that a large but indeterminate percentage of students continue in a disinterested manner without commitment to the value (relevance) of their studies. Indeed, there is evidence that even for students who remain nominally enrolled the rate of absenteeism reaches twenty-five to fifty percent or higher in some areas.

Documentation

Schreiber, Daniel (ed.), Profile of the School Dropout, Vintage Books, 1968

Analysis

While a larger and larger proportion of the American population retains student status for longer and longer periods of time (and it may be that these curves have reached levels beyond which there will be no more than marginal increase) concern is expressed that students are skeptical of the value of many of their courses, are bored or "turned off" at all levels including college and post-graduate, and are uncommitted to any goals but getting through--being certificated and accepted in the labor market. Unfortunately, there is little baseline data (but a wealth of anecdotal material) to establish the development of the phenomenon described. Whether present levels of non-commitment are higher or of a different sort than in the past is not at all clear. However, with the enormous investment of money and student time in schooling it is obviously imperative that the present extent and meaning of non-commitment be established through research and appropriate responses be devised.

Goals

- To define the terms "lack of student interest"; "dropout"; "absentee"; "lack of commitment" in other than subjective or emotive, non-quantifiable expressions.
- To devise a methodology for sampling the level of existence of these conditions throughout the student population.
- To identify and describe those individual and environmental causes of these conditions, including non-school causes and the interaction between personality and environment.
- To conceive, organize and test programs for relief of the condition that schools might carry out; to conceive and recommend programs for relief of the condition that other than school agencies should administer.

Problem Worksheet A-5

The Relationship Between Education and Employment--Preparation for Work

Acute

Levien Program Area I, II

Problem Description

The very high level of unemployment among teenage jobseekers in the United States (18.8% in February 1972) is frequently cited as evidence of unsatisfactory preparation for employment by the schools. At the same time, on the basis of analyses done chiefly in the 1950s and 1960s the value of lengthened secondary and post-secondary education has been defended on the basis of discounted future earnings projections. A major thrust of present U. S. education policy is "Career Education" in which it is assumed that the relationship between education and employment is actual and that appropriate programs suitably implemented will optimize the relationship and reduce or eliminate the social problem of youth unemployment.

Documentation

Cohen, Eli E., and Kapp, Louise (eds.) Manpower Policies for Youth, Columbia University Press, New York, 1966

Carrol, S. J., and Pascal, A. H., "Toward a National Youth Employment Policy," Policy Sciences, June 1971, 159-175.

Fisher, Bernice, Industrial Education, University of Wisconsin Press, 1969

Harbison, Frederick and Meyer, Charles, Education, Manpower, and Economic Growth: Strategies of Human Resource Development, McGraw-Hill, New York, 1964.

MacMichael, David C., Career Education--Prognosis for a Policy, EPRC, Stanford Research Institute, 1971.

Venn, Grant, Man, Education, and Work, Washington, D.C., 1962

Analysis

A fundamental educational tension, dating from the debates between Socrates and the sophists, exists over the purpose of education. Is the individual to develop through education his own personality as the chief goal or is he to prepare himself to compete economically? Modern mass education has to some extent blurred the distinction in its development. The ideal has been the production of the broadly educated man or woman who was assumed by the fact of his cultural development to be able to adapt himself to the demands of the economy and society in the business of making a living. Practice has tended to be otherwise, and the ideal has been so long breached that it is now openly depreciated as untenable and even counter-productive. Hence, the assertion that schools fail their students in proportion to the stress they place on the "academic" goal of personal development to the neglect of providing the necessary training to enter the economy.

Problem Worksheet A-5

The Relationship Between Education and Employment--Preparation for Work (Cont.)

Analysis (cont.)

Given the very serious doubts raised by economists and sociologists about the direct and demonstrable relationship between formal education--vocational or general--and patterns of employment, and the implications of continuing rapid technological and organizational change on the national and world economies as well as the important and only partly perceived impact of attitudes toward work and life goals and roles among important segments of American society, it is reasonable to believe that the education problem so simply stated and resolved in the publications of the National Advisory Council on Vocational Education is actually only a part of an enormously complex socio-economic situation. Thus, there exists a need for searching analysis of the myriad sociological, economic, psychological, and operational aspects of this situation and determination of the manner in which the educational system relates to them and can be reasonably expected to contribute to their solution.

Goals

- To define the extent to which formal education is a determinant of life work (employment) patterns.
- To describe in both quantitative and qualitative ways the manner in which school leavers enter the economy.
- To identify patterns of social and economic change (national and global) that impinge on the problems of labor force entry.
- To identify and describe personal and social attitudes about human economic function that do and will affect present and future labor force composition and performance.
- To consider the effects of probable technological change on labor force needs.
- To determine the extent to which the employer community (the determinors of employability) actually rely on the educational system to provide a trained work force.

Inadequate Supply of Diverse/Competent Educational R&D Manpower

Acute

Levien Program Area IV

Problem Description

The small amount and poor quality of previous educational research means that there is not already a sufficient number of well-trained, competent manpower with the diversity of skills that will be needed in an NIE.

Documentation

In the past, the educational researcher was part-time, and worked on fragmentary and small scale efforts; the research productivity of most educators was miniscule; most researchers had backgrounds in psychology or educational psychology. (Clark & Hopkins, A Rpt on Ednl RD&D Manpower, 1969).

"The flow of researchers into the field of education is not nearly sufficient to insure the continued development of new knowledge at the rate required for reasonable progress in education." "Education has generally lost the most productive research years by requiring the achievement of high professional rank before recognition is given to the academic responsibility for scholarly production through released time from regular teaching and service assignments." (Culbertson & Hencley, Ednl Res: New Perspectives), p. 13.

"Efforts to improve skills of current (researchers) who are poorly prepared to carry out research are often frustrated by the faculty's indifference, the lack of time for training in new skills, and the difficulty of altering perspectives acquired through years of professional work and study." p. 61, Sieber and Lazarfield.

"Few problems in the advancement of educational research have been discussed with greater vigor and consensus than the scarcity of qualified researchers." p. 251, Siber and Lazarfield.

"One of the particularly critical problems for the educational R&D manager is identifying, recruiting, and, if necessary, training the supplies of manpower required...educational research and development programs require trained scientific and technical manpower...the range of competencies required may be considerable, not only for scientists from a broad range of disciplines, but also for support personnel in the form of technicians, dissemination specialists, and the full range of skills required for educational development." (p. 136, Hendrik Gideonse, Ednl R&D In the U.S.)

Analysis

"A perusal of the literature on development of research personnel in schools of education indicates three major problem areas: (1) the recruitment of talent, (2) the research climate of the school, and (3) the provisions which are made for training researchers." p. 261 Sieber and Lazarfield.

"Training of educational researchers should include (1) instruction in the established doctrines, (2) analysis of outstanding pieces of research,

Problem Worksheet A-6

Inadequate Supply of Diverse/Competent Educational R&D Manpower
(Cont.)

Analysis (cont.)

(3) clinical experience, (4) field observation, and (5) research reporting." p. 348, same.

The R&D training potential of all proposed research programs should be thoroughly investigated.

Goals

- To recruit and train an adequate supply of competent R&D manpower, through both schools of education and ongoing educational research projects.
- To foster research on the part of teachers and other staff in the field.
- To explore available manpower and research training potential of related fields.

Development of Multi-Agency Approaches to Education-Related Problems

Acute

Suggested Program Area V

Problem Description

Many problems are systemic in nature, hence require the multi-agency coordination, at the state, federal and local levels and both public and private.

Documentation

The jurisdictional lines that will probably be drawn between NIE and USOE regarding the conduct of R&D as opposed to dissemination and evaluation are such as to create a severe interface problem that will limit the effectiveness of both (O. W. Markley, "Present Opportunities for Federally Sponsored Educational R&D" SRI/EPRC research memorandum in draft).

Analysis of the compensatory education approach to education for the disadvantaged leads to the conclusion the unequal educational achievement by race or class is more the result of societal circumstances than of educational experiences, per se, and that it is unrealistic to expect that the educational system, acting alone can solve this problem (J. S. Coleman, Equality of Educational Opportunity, OE-38001, 1966.)

Analysis

The NIE-USOE interface problem and the problem of providing better life chances for disadvantaged populations are but two examples of problem areas which call for a higher order of inter-agency or multi-agency coordination than is usually the case. Another example is integrated community services. A vast number of societal problems are education-related although education as an institution can often do little independently.

As this is a difficult and complex area, of the highest importance to society, it is recommended that this area be considered as a separate Program Area in addition to the four that Levien's Preliminary Study designated. (Time constraints of the present study preclude adequate documentation and analysis of all or even most of the relevant considerations involved.)

Goals

- To improve the state of the art and to develop a strong tradition of multi-agency approaches to education-related problems.
- To develop, if feasible, the Development of Multi-Agency approaches as a major Program Area for NIE.

Erosion of Commitment to Scholarly Inquiry

Acute

Suggested Program Area VI

Problem Description

There appears to some observers a dangerous lack of commitment to (or actual revolt against) the values of reason, scholarship, understanding and mastery which become especially critical in a time of national crisis.

Documentation

"Young people today are showing a potentially dangerous lack of commitment to the traditional values of scholarship, understanding, mastery, and performance in areas of business, science, medicine, technology, etc. (Davis, p.3)

In the fall 1968 issue of The Public Interest, Seymour Lipset referred to the "heightened resentment among humanistically inclined, 'general' intellectuals toward the increased emphasis on intellectual technology and expertise... These trends have contributed to the rise among many intellectuals and students... of a backlash opposition to systematic and quantitative social science, to large-scale social research, to the very conception of the utility of efforts at value-free objective scholarship in policy-relevant fields." (pp. 41-2)

Analysis

This revolt against reason has been noted by a number of observers, however there has been little empirical evidence. Whenever established ways of doing things are challenged, the first charge leveled is lack of reason or unreasonableness; and we live in a time when much is being challenged.

Another issue is related to this, but is more concerned with the future needs for a broad range of competent societal analysis. The fear is expressed by Don Michael that a growing number of people will opt out of the rigorous training required.

In some sense, the revolt against reason could be justified as a long overdue reaction to the simplistic rationality of most graduate school research methodology courses, or to the oversold promise of computer rationality or systems analysis.

Goals

- To increase emphasis on critical thinking in college and especially graduate school aimed, not so much at vigorous scientism but at critical reasoning and the development of conclusions about how to proceed in the face of relative ignorance.
- To increase emphasis on the rigorous study of real-world issues apparent relevance to students.

Critical Societal Problems and Needs of the Future

Adaptive

Levien Program Area I, III

Problem Description

A number of societal problems are anticipated in various plausible alternative futures that education (and educational R&D) will be called upon to solve. These need to be articulated and analyzed so that anticipatory strategies can be developed, thus avoiding fragmentary and less effective "fire-fighting" of crises. Critical problems of the future that have been identified include: unregulated growth of resource-depleting industry; expanding have-have not gap, both between nations and within this nation, with regard to both physical resources and knowledge; a high and accelerating rate of change in society, possibly leading to a loss of cultural integrity and "future shock;" increasing divisions within society and eroding legitimacy of social institutions among groups whose rights and needs are not adequately served; and finally, the lack of a sufficiently attractive, practical vision of how society can operate to solve these problems, and ensure national unity by enlisting the loyalty of divergent groups in society.

Documentation

A variety of books and articles deal with these topics, many of which are cited and/or discussed by:

Harman, W. W., "The Nature of our Changing Society: Implications for Schools.", Eugene, Oregon: ERIC-Clearinghouse on Educational Administration, 1969.

Marien, M., "Essential Reading for the Future of Education: A Selected and Critically Annotated Bibliography." Syracuse, N.Y.: Syracuse University Research Corporation, 1970.

Markley, O. W., et. al., "Contemporary Societal Problems," Menlo Park, Calif.: Stanford Research Institute, 1971.

Analysis

Although the art of "futures research" and its application to concrete program planning is still in its infancy, and although a wide variety of contradictory conclusions have been drawn by different futurists, this area of research is clearly of crucial importance to NIE program planning and evaluation. Based on the experiences of the Educational Policy Research Centers, the following conclusion seems warranted: If "futures research" is to be of maximum usefulness to NIE, it needs to be focused on two different tasks: (1) analysis of broadly conceived issues relating to society and the planet as a whole; and (2) analysis of more narrowly conceived issues relating NIE concerns, per se, to the broader issues.

Goals

- To increase the quality of research related to the identification and analysis of critical societal problems and needs of the future.

Problem Worksheet Ad-1

Critical Societal Problems and Needs of the Future
(Cont.)

Goals (cont.)

- To improve the state of the art in translating anticipated societal problems and needs into program planning and evaluation
- To make educational R&D and educational practice more responsible to future societal problems

Educational Policy Implications of "Radical" Discoveries

Adaptive

Levien Program Area IV

Problem Description

An expected result of the continuing "knowledge revolution" is the production of new discoveries which, if applied, would have large, perhaps radical effects on the public education system. Current examples of such discoveries include the heritability of intelligence, effects of interpersonal expectations (as of teachers for students), and so forth.

Documentation

(see below)

Analysis

Ample documentation typically exists describing new discoveries and the controversies that question their validity (as with, for example, Jensen's heritability contentions and Rosenthal's findings concerning teacher expectancy in the classroom). We have not yet, however, developed a tradition of systematically assessing the larger policy implications of new discoveries while there is yet time to choose among the most favorable alternative policy responses. Such a tradition is needed, and it needs to incorporate the principles of "moral inquiry" (see problem III 0).

Goals

- To develop mechanisms and more adequate methods for systematically examining educational policy implications of "radical" discoveries.

Assessment and Regulation of Emerging Psycho-Technologies

Adaptive

Levien Program Area IV

Problem Description

A variety of new "psycho-technologies" are being discovered and developed that are perceived to be both very promising as aids to learning and very threatening to human freedoms. These include operant conditioning, psychoactive drugs, cerebral electro-implantation techniques, as well as other techniques.

Documentation

The literature in this area is very inadequate. Delgado, Jose, (Physical Control of the Mind: Toward a Psychocivilized Society, Harper Row New York, 1969) has analyzed some of the public policy implications of the new psycho-technologies.

The issue has attracted Congressional concern, most notably from Cornelius Gallagher who has spoken strongly for the need to protect the public welfare in these new areas.

Analysis

The state of the art of technology assessment is still in its infancy: predominantly oriented to assessment of effects on the physical ecosystem, not yet having come to grips with the problems of effective regulation. Thus the whole area of psycho-technology assessment and regulation remains an almost untouched immediate importance to education and to society.

Issues that need to be explored include: (a) whether basic research should be controlled (other than by not giving public support for some areas of inquiry); (b) the development of standards for psycho-technology assessment; (c) viable mechanisms for ensuring knowledgeable public participation in the assessment and regulation of psycho-technological application in education; and (d) viable mechanisms for regulation involving more than assessment.

Goals

- To develop the state of the art in psycho-technology assessment and regulation, especially as it related to education
- To foster knowledgeable public participation in the process of psycho-technology assessment and regulation.

Metaproblems Having Educational Implications

Adaptive

Levien Program Area III

Problem Description

A variety of metaproblems (such as "what is the nature of man", "what is the purpose of education", "is the concept of freedom an illusory one") seem always to have been with us, but with the emergence of new and powerful technologies take on a new significance for education and for society. Someone must decide whether these technologies should be applied to public education or not (see also problem #IV H.).

Documentation

It has been well documented that the enduring meta-problems relating to our existence have been answered in very different ways in each of the several major eras in the history of civilization (see, e.g., Boulding, K. E., "The Meaning of the Twentieth Century" New York: Harper & Row, 1964; L. Mumford, "The Transformations of Man," New York: Harper & Bros., 1956)--ways that directly affect how such societal functions as education are performed. As there is a strong possibility that still another major cultural transformation may currently be under way (same references as well as W. W. Harman, "The New Copernican Revolution," Stanford Today, Winter 1969), a critical examination of metaproblems in a transitional society seems appropriate.

Analysis

The analysis of meta-issues relating to ultimate questions such as the purpose of education, the limits of the adaptability and educability and to scholastic nit-picking than to useful insights for educational or other policy making. Nevertheless these kinds of questions seem to have assumed a new importance in our time. As such they seem appropriate to list as educational R&D goals for analysis in Task II of this NIE planning study.

Goals

- To sponsor inquiry on how best to relate meta-issues of society to educational policy considerations.
- To identify contending conceptions regarding the nature of man and society in the present and the future.
- To identify conceptions regarding the nature of man and society that have promise as ways to help unify society in a time of transition.

The development of "Higher Level" Skills

Adaptive

Levien Program Area II

Problem Description

If an increasing "standard of living" is to be transcended by an increasing "quality of life" in society, more adequate development of higher level skills seems a necessary education goal. Higher level skills are those which enable citizens to establish a sense of community in spite of a high rate of mobility; to meaningfully integrate diverse information inputs and to perceive complex situations in holistic terms in spite of information overload; to communicate effectively with persons outside of one's own disciplinary speciality or with those who hold differing basic values or ideologies; and to quickly establish a sense of trust or effective relationships with others in temporary work groups.

Only if these kinds of skills are developed can we expect the society to avoid the kinds of pathologies that have been labeled "future shock" (Toffler).

Documentation

Although the need for better teaching of such "higher level" skills has been clearly established by the analysis of the SRI/EPRC (see, e.g., W. W. Harman, "Alternative Futures and Educational Policy"), the literature describing what has been done in this area is very complex and diverse. A literature search of this area was therefore put off until Task II.

Analysis

The teaching of "higher level" skills as part of the public school curriculum is sure to generate conflict, due to the fact that many such skills can be seen as political in nature ('education as a form of political activism'), and that the teaching of socio-emotional skills raises issues of basic values usually kept safely implicit (witness the conflict surrounding sensitivity training in the schools).

Thus this area has a higher degree of political sensitivity than most issues that NIE might address, and will have to be approached with that in mind.

Goals

- To identify the kinds of "higher level" skills with which citizens can avoid "future shock".
- To discover effective ways in which such skills can be learned.
- To establish appropriate ways for public education to teach politically sensitive concepts and skills.

Flexible Problem Solving Skills in Real-World Situations

Adaptive

Levien Program Area 1

Problem Description

If students are to be adequately equipped to deal effectively with the rapidly changing problems and environment of the future, and if society is to enjoy a competent infrastructure, the development of suitable problem solving skills is of crucial importance.

Documentation

Especially salient works are:

Harman, W. W. "Alternative Futures and Educational Policy" Menlo Park, Calif.: Stanford Research Institute, 1970 (dealing with why this concern is of vital importance from a futures perspective).

Michael, D. N., "The Unprepared Society: Planning for a Precarious Future." New York: Basic Books, 1968 (dealing with the importance of focusing on the training of youth elites in flexible problem solving skills).

Coleman, J. C., "The Children have outgrown the schools." Psychology Today, Feb. 1972 (dealing with the changing kinds of extra-school experiences and needs that youth of today have; concluding with a rationale for education that provides direct, not vicarious experience, the ability to integrate diverse kinds of information, and to practice problem solving in a variety of meaningful environments).

Analysis

From a variety of perspectives there is a clear-cut need for educational practices that offer direct rather than vicarious, extra-school rather than intra-school, and generalized rather than specialized learning experiences. The history of the progressive education movement indicates that these objectives will be difficult to realize; the experience of various work-study programs indicates that the approach of more or less simply putting the student into the adult world of work as conventionally defined is an unsuitable one for these purposes. Serious study therefore needs to be undertaken, both of the history of the progressive education movement, and of presently feasible approaches which have promise as ways to provide these kinds of educational experiences and skills.

Goals

- To increase the degree to which conventional educational practice can feasibly provide educational experiences which lead to flexible problem solving skills in the real-world and in environments which are unfamiliar.
- To identify the principal variables on which effective flexible, or generalizable problem-solving skills are based, and how they can best be imparted to different types of students.

Goals, Needs and Problems of Education

I. Critical problems in education

1. Equality of educational opportunity; how do you teach the poor (Moynihan, P. 13)
2. How to implement change; how to get new ideas into the classroom (Gallagher, p. 35 & 39; Allen, p. 82 & 85)
3. Need for alternate types of education (Allen, p. 85; Levien, p. 219)
4. "We have much to learn about human needs and the capacity of our institutions of learning to help their individuals meet those needs" (Marland, p. 497)
5. Greater emphasis and resources into preschool years (Moynihan, p. 17 & 27; Bailey, p. 59; Levien, p. 217 & 218)
6. Standards and techniques for evaluating the comparative effectiveness of innovational programmatic evaluation (Allen, p. 79 & 80; Gideonse, p. 230 & 232)
7. Gap between knowledge and action, research and practice; translation of research into programs (Gallagher, p. 36; Allen, p. 80 & 81)
8. Deepen understanding of behavioral and social phenomena; study attitudes; need for clinical observation (Moynihan, p. 16; Bailey, p. 58; Allen, p. 80; Marland, p. 111; Howe, p. 146)
9. Problem of drop-outs (Edu. Adm. Richardson, pp. 2179-2188)
10. Problems of confrontation and violence (Edu. Adm. Levien, pp. 2351-2362)
11. Need for improved measurement; validity of tests (Meeds, p. 19; Allen, p. 83)
12. Accountability (Moynihan, p. 17 & 25; Allen, p. 83)
13. Financial crisis (Edu. Adm. Levien, pp. 2351-2362)
14. Nutrition (Moynihan, p. 17; Keppel, p. 171)
15. Students leave school with no skills (Edu. Adm. Richardson, pp. 2179-2188)

II. Advancing the practice of education as art, science, profession PRK

1. Teach kids to be critical thinkers; schools stifle creativity and curiosity; teach kids to cope with change (Allen, p. 89)
2. Give more autonomy to students; capitalize on research possibilities thus opened up (Allen, p. 79)

3. Schools are joyless (Edu. Amd. Levien, pp. 2351-2362)
4. New energy imposed on the questions of values and pluralism of our society; essential we retain pluralism (Bailey, p. 61)
5. A variety of points of view should be represented in the school; curriculum should encompass all that is legal and sanctioned in society in its full diversity, religious, political, moral (Bailey, p. 61)
6. More emphasis on man's relation to man; study possibilities in sensitivity training (Allen, p. 79 & 89)
7. Experimentation in structure and timing (Levien, p. 222-223)
8. Link together levels of education (elementary, secondary, higher) (Allen, p. 86)
9. Learn more about adolescence (Moynihan, p. 23)
10. Renewal education for older people (Edu. Amd. Richardson, pp. 2179-88)
11. Improved management techniques (Edu. Amd. Levien, pp. 2351-2362)
12. Decrease existing costs of education by economies of scale (Bailey, p. 57)
13. Strengthen teacher's ability to do job more effectively; "take a hard look at common assumptions and hallowed traditions in profession of teaching" (Gallagher, p. 45; Allen, p. 79; Marland, p. 111)
14. Incentives for teachers to implement innovations (Levien, p. 220)
15. Relieve teachers of administrative duties (Levien, p. 214)
16. Study relationship between teacher behaviors and learning in students; relationships between teachers' attitudes, personality characteristics, and behavior (Allen, p. 79)
17. Study correlation between teacher education and student learning; between certification and student learning (Allen, p. 83)
18. Study correlation between hours of instruction and student learning; between school and student learning (Allen, p. 83)
19. "The marketplace of educational ideas is a blizzard of false claims and phony evidence;" inventions, innovations should be field tested in real American schools, communities (Dentler, p. 183)
20. Study local processes of curriculum development (Marland, p. 111)
21. Increased interaction between school and community (Allen, p. 86)
22. More research in field of work-study opportunities (Bailey, p. 58)
23. Commit more resources, material and human, to risk; reward risk more than we do (Allen, p. 82)
24. Incompatability of educational technology (Ottinger, p. 66)

III. Strengthen scientific and technological foundations on which education rests

1. Do not know about the learning process and the neurological and physiological conditions of learning (Bailey, p. 54)
2. Effects of media, nutrition, drugs, family background, and environments on learning (Bailey, p. 51)
3. Biochemistry of memory (Edu. Adm. Levien, pp. 2351-2362)
4. Process of language acquisition (Edu. Adm. Levien, pp. 2351-2362)
5. Research in reading and mathematical skills and social studies (Bailey, p. 58)
6. Research into socialization (Bailey, p. 58)
7. Research into finance and structure of education (Bailey, p. 58)
8. Development of software in educational technology (Levien, pp. 225-226)

IV. Building an effective R&D system

- X-1. Research has dealt with trivial matters, asking small questions with small answers (Levien, p. 193)
- X-2. Scientific base has been too narrow, psychology has provided most of the basic concepts and techniques (Allen, p. 79; Richardson, p. 109; Levien, p. 193)
- X-3. Research should be interdisciplinary (Stockton, p. 172)
- X-4. Governmental amnesia about past priorities; change every 2 or 3 years, often coincident to major changeover of leadership staff; priorities disappear before programs can really get under way (Gallagher, p. 33; Bailey, p. 51; Ottinger, p. 74; Edu. Amd. Levien, pp. 2351-2362)
- X-5. "The level of funding has been impossibly inadequate" (Gallagher, p. 34; Bailey, p. 50)
- X-6. NIE's organization should fully reflect the political dimension of educational R&D as well as its scientific dimension (Gideonse, p. 230)
- X-7. Improve evaluation of policy alternatives (Edu. Amd. Levien, pp. 2351-2362)
- X-8. The decision-making processes of NIE should be more widely opened to the public (Gideonse, p. 231)
- X-9. Attract high quality researchers and scientists (Richardson, p. 109; Edu. Amd. Levien, pp. 2351-2362)

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10. Need high level personnel to provide wise leadership for the major program thrusts (Gallagher, p. 32, Bailey, p. 50)
 11. Coordinate R&D activities among Federal agencies (Levien, p. 203)
 12. Increase funding for Regional Labs; put on a program support basis; should be administered in NIE (Bailey, p. 50; Gallagher, p. 41)
 - EXTRAORDINARY 13. Provide decentralization of both the decision-making and conduct of educational R&D (Gideonse, pp. 230 & 232)
 14. Establish liaison with universities (owe, p. 146)
 - X 15. Real problems of practice should define what R&D needs to be done; turn practitioners into more demanding consumers (Gideonse, pp. 230-231)
 16. Train and support school people to organize and conduct R&D divisions in schools (Allen, p. 83)
 - TITLE III
HOW GET BUREAU 17. Need for much more widespread participation in the process of research and development; "from participation come both commitment and understanding" (Gideonse, p. 232)
 18. Provide a free "always open" consultant research service component for all developmental school programs (Allen, p. 83)
 19. Unite "pure" and action research so that they have a mutual relationship; create a "direct and lasting relationship between the school and NIE" (Allen, p. 80 & 83)
 20. "Anytime you get a battle of views that have to gain consensus, you get the lowest common denominator; isolate NIE sufficiently from day-to-day responses of people so that we can get some assurance of long-range continuity, get some assurance that diverse programs can be funded, and that we don't create the kind of commission mechanism that reduces everything to the lowest common denominator" (Allen, p. 86)
 21. Orient programs and research to the problems of society (Allen, p. 94)

Problems with R&D practice and application

I. Critical problems in education

1. Chasm between educational innovation and educational implementation; help teacher learn new systems of teaching, which means interaction with trained people and demonstration (Gallagher, p. 35; Allen, p. 80)
2. Match/mismatch between innovation and child's previous experience, subsequent experience, present demands, or school resources (Richardson, p. 108)
3. Research that has been done is consistently ignored in the practices of the schools (Allen, p. 80)
4. Consumers (educators, administrators) should have more voice about research and programs generated (Gallagher, p. 33; Richardson p. 108)
5. "The most detrimental factor (in educational R&D) is the preponderance of university-based, individually done, unrelated and unresolved student and faculty academic work" (Allen, p. 80-81)
6. Need models which will make implementation dependent on on-going research, and research dependent on current innovations (Allen, p. 79)

II. Advancing the practice of education as art, science, profession

1. "We have a growing body of 'humanistic' psychology that has wide implications for education and yet we seem almost afraid to get involved in research on the effects of sensitivity training and our research methodology ill equips us to do so" (Allen, p. 79)
2. Fail to search for intuitive, subjective research methods (Allen, p.79)

III. Strengthen scientific and technological foundations on which education rests

1. We continue to use old statistical models which negate individual differences rather than developing new ones which might teach us something about them; the chasm between social and statistical significance...sits before us waiting to be bridged (Allen, p. 79-80)

IV. Building an effective R&D system (most of these have also been listed under "Goals, needs, and problems of education")

1. Research has dealt with trivial matters, asking small questions with small answers (Levien, p. 193)
2. Scientific base has been too narrow, psychology has provided most of the basic concepts and techniques (Allen, p. 79; Richardson, p. 109; Levien, p. 193)

3. Research should be interdisciplinary (Stockton, p. 172)
4. Governmental amnesia about past priorities; change every 2 or 3 years, often coincident to major changeover of leadership staff; priorities disappear before the programs can really get underway; need for long-term funding (Gallagher, p. 33; Bailey, p. 51; Ottinger, p. 74; Edu. Amd. Levien, pp. 2351-2362)
5. "The level of funding has been impossibly inadequate" (Gallagher, p. 34; Bailey, p. 50)
6. NIE's organization should fully reflect the political dimension of educational R&D as well as its scientific dimension (Gideonse, p. 230)
7. Improve evaluation of policy alternatives (Edu. Amd. Levien, pp. 2351-2362)
8. The decision-making processes of NIE should be more widely opened to the public (Gideonse, p. 231)
9. Attract high quality researchers and scientists (Richardson, p. 109; Edu. Amd. Levien, pp. 2351-2362)
10. Need high level personnel to provide wise leadership for the major program thrusts (Gallagher, p. 32; Bailey, p. 50)
11. Increase funding for Regional Labs; put on a program support basis; should be administered in NIE (Bailey, p. 50)
12. Real problems of practice should define what R&D need to be done; turn practitioners into more demanding consumers (Gideonse, pp. 230-231)
13. Need for much more widespread participation in the process of research and development; "from participation come both commitment and understanding" (Gideonse, p. 232)
14. "Anytime you get a battle of views that have to gain consensus, you get the lowest common denominator; isolate NIE sufficiently from day-to-day responses of people so that we can get some assurance of long-range continuity, get some assurance that diverse programs can be funded, and that we don't create the kind of commission mechanism that reduces everything to the lowest common denominator." (Allen, p. 86)
15. Orient programs and research to the problems of society (Allen, p. 94)
16. Complexity of educational research: We really do not know why Johnny can't read: is it because of his mother's diet during the prenatal period; is it because of inadequate parental play in the early months of life; is it because of "cultural deprivations" in the home--whatever that slippery term means; is it because of the self-fulfilling prophecies of teachers who believed that Johnny was stupid; is it because of poor instruction; is it because of a low self-image reinforced by failure in terms of middle class grading norms; is it because of some ineffable combination of all these factors?
And today, if a single teacher in a ghetto school is able to demonstrate that she can succeed in spite of all these questions, how can what she has, or what she is, be bottled for shipment to the tens of thousands of other schools in this country? (Bailey, p. 51)

I. Critical problems in education

1. Education of disadvantaged

a. "What I hope the NIE would do would be to fund the kinds of activities that people in various communities would like to see going on, and not necessarily choose any single one to be the national approach. It would encourage and facilitate the exploration of a variety of alternatives that people have seen as potentially useful, to make available to these communities a variety of ways of approaching their own problems. I think as long as NIE approaches its charter as one of broadening the choice that educational communities can have in solving their problems, and of giving them good information, a lot of the cause of controversy can be avoided." (Levien, p. 207)

b. "The first thing the NIE would do is design a coordinated national program addressing that particular problem. You mentioned a few hypotheses about what causes educational disadvantage--the influence of nutrition and early child care.

I would see this comprehensive national program doing a number of things. First, taking those hypotheses and putting them on firm ground, doing whatever research has to be done to determine whether they are true or how they have to be modified. Second, turning what is known now, or what is well understood into operating programs. The first example is nutritional deficiency. The NIE might support development of some new forms of child care that have a special concern for nutrition and encouraging mental growth in the early years, and so on. Third, disseminating these results, and making them available through demonstration facilities in various localities. Fourth, undertaking new developments in entirely different curricula, experimental schools, and forms of schooling, addressed to the problem of the disadvantaged and interlinked to provide a coordinated approach in which research and development and implementation, all focus on this one problem. The NIE would seek to employ the best people and the best institutions to carry on these programs." (Levien, p. 217)

c. "We may have to move in the next few years to some kind of voucher system...saying to parents, if the existing school system leaves your child behind, then here is a voucher that will enable you to take that child for

certain periods of the day and put that child in the hands of specialists in the areas of his deficiency, and I think some kind of movement of that sort may be necessary." (Bailey, p.61)

- d. "The Southwest Regional Laboratory in Inglewood, California, has put together what they call a first year communication skills program which they have addressed particularly to minority groups in the Los Angeles area. They are taking a problem like the reading problem and breaking it down into modular units, developing kits of teaching materials, ways of learning, ways of training leaders, ways of tutoring tutors, and I think this is a program... that would make a difference. I would commend this program to this committee. ...You can get further information from OE...." (Bailey, p. 60)

2. Communication, dissemination, putting R&D results into practice

- a. "...Establish three or four models of communication systems,...put them into place in regions or states where it would be possible to show how you could get the newest ideas and programs into effect at the earliest possible time. I think there are some models that have been developed (the Special Education Instructional Materials Network; Regional Educational Laboratories) that would give guidance along these lines. (Gallagher, p. 43)
- b. "Do you believe it is compatible to the national education program to utilize the private sources of communication in a voluntary basis?" Yes.... If you take the concept of a national institute of education and the prestige that such an institute would have, it could bring together the leaders of the communications field and present them with the problems and say: 'Look, here is what we need in order to communicate these ideas more effectively. What can you gentlemen provide for us in the way of advice and plan?' The plan would involve both private and public sectors, I would hope. (Gallagher, p. 44)
- c. We want to help that teacher learn new systems of teaching, and that means interaction with trained people. It means demonstration and it means a more intensive effort of training the teacher in the new methods than we have allocated for in the past. (Gallagher, p. 38)
- d. The program change, when it takes place, usually occurs because of some personal relationship that has been formed between the seller and the consumer. Unless you have systematic channels of communication involving personal contact, the changes will be difficult to maintain, even if they are started at administrative level. It is hard to find those elements in the new program that are so rewarding that it will overcome fears and anxieties raised by departing the educational status quo. (Gallagher, p. 38)

- e. "(NIE) can produce interesting and informative presentations of research findings in multiple forms--movies, videotapes, slide tapes, publications--which can be used by various publics for both training and awareness purposes. It can also catalogue, store, and distribute these materials." (Allen, p.83)
- f. "...If the transfer into practice is to occur, we need a much wider two-way highway, in which the problems of practice are fed back into research and development at the same time as what R&D finds is fed forward into practice.
 "...See that R&D people are present in all parts of the educational system." (Levien, p. 220)
- g. (The Bureau of the Handicapped in OE)"has this special education material center network that was established with about 14 centers throughout the country, and their mandate was to get new ideas into the field as quickly as possible, once they are validated. They have since set up 300 associate centers. These are centers at the local level that take responsibility for the actual delivery to the teacher, whereas the centers themselves provide materials to the associate centers. (Gallagher, p. 43)

II. Advance practice of education as art, science and profession

1. Teaching

- a. "...Children get more excited, more involved and consequently do better if they have a share in planning.... We believe this condition is a prerequisite for retaining enthusiasm for teaching in teachers. (Desmond, p. 447)
- b. Educators have long recognized that children often learn as much or more from their peers than from their instructors. It is just as valid to apply this principle to the on-going development of the professional skills of the teachers in the school." (Desmond, p. 447)
- c. "...We finally tried another course of action--we presented a demand at the bargaining table to set up model experimental programs that teachers had a hand in designing. Nationally it is referred to as the American Federation of Teachers' 'More Effective Schools Program.' In Chicago we call it Project READ. The program design has been a little different in each city. Project READ, now successfully implemented in three schools in Chicago, has three things in common with other More Effective Schools programs.
 - 1) Teachers helped design the program. They weren't handed a design and told that what you have been doing was wrong, this is what you should do.

- 2) Each program is developmental--it changes as the teachers, in working with each other, the school administrators, the parents and the other professionals on the staff, develop their own perceptions of what their children's needs are, how well the materials match the children's needs and what other kinds of materials or approaches can be used.
- 3) This development of the teacher's own skills is viewed as an integral part of his professional responsibilities--in the schools within the school day." (Desmond, p. 447)

2. Teacher training

- a. "...Start with in-service training for teachers, and reform that process in such a way as to engage the teachers from the very beginning in understanding the role and use of R&D. Secondly, it has to be built into the teacher's career.... The schools council model in England is useful. There they have developed a system of teacher centers in many of the local districts. These are the mechanisms by which teachers in that area come together to work on common problems and to cooperate with national curriculum development teams. They come to the centers to develop and test improved methods and curricula. ...I think we have to focus on the teacher and focus on training teachers to engage in the process of reform. (Levien, p. 218-219)
- b. (Inservice teacher training) "...We (U. of Massachusetts) may find a series of school districts that would be willing to embark on a 3-year program with the university. The first year, the university and school district jointly explore ways in which the program would change substantially. The second year the university and school would work jointly to develop the logistic support and ability to implement such programs. And the third year the university sticks around to take some responsibility to implement the program of reform. In the process of that 3-year period study, you could base your inservice teacher education and your preservice teacher education out in the schools. (Allen, p. 93)

3. Experimental schools, programs

- a. (NIE) "...can establish experimental schools in which all participants are aware of the risks and willing to accept the consequences. These schools will have immunity much as the new Disneyland in Florida has been able to gain immunity from state regulations for its own school system. We will systematically set up competitive and alternative educational systems. This can be done in the public schools." (Allen, p. 83)

- b. "...Invent mechanisms where a certain percentage of students could be shifted over to experimental programs with an option that every year or two a larger percentage could be added until we gain equilibrium between demands for option and the options which exists." (Allen, p. 92)
- c. "I would be in favor of analyzing a free ticket to the to the kind of post-secondary education that uses hundreds and hundreds of different models. It may be at computer operator school or barber college, or plant security guard, or major in Greek and philosophy at Harvard. ...It pays to give every young person a passport to develop their talents to the utmost; and it ought to be paid for by the Federal Government." (Howe, p. 157)

4. School government

- a. "...We need experimental models on school government.... It might very well be local school boards as we have known them historically in this country are really inadequate to take over the school governments in the future."

(Bakalis
p. 430)

III. Strengthen scientific and technological foundations on which education rests

- 1. "...We ought to reorient the programs or university research so that instead of being exclusively oriented to disciplines, they become oriented to the problems of society. ...That sociologists, anthropologists and psychologists will become members of a national faculty. At the institutional level we should have institutes on man and environment and other problematic problems in society. If that happens, then you have a way to compel scholars to devote major parts of their energies to university based research that has more immediate payoff in society." (Allen, p. 94)
- 2. Confine the area of research to a fairly limited number of these enterprises. One of the difficulties with Headstart is that we have tried to go out and evaluate all Headstart programs. There are x number of thousands of these, no one of which is alike. You don't get good research out of that. You get good research by saying we are going to do a thousand of these things and we wish them all luck but there will be a few which we are really going to watch, we are going to instrument, we are going to calibrate and we are never going to let go. Concentrate your inquiry on a few and, for the rest, hope for the best. And then learn to recycle your findings among the rest." (Moynihan, p. 17)

3. "There is a level of research in this area which is extraordinarily abstract and important, that is, the kind of molecular biology that led to the discovery of DNA. We are beginning to have a sense of how the brain works, and there are men who really think we are about to get it. They know each other and they just need to be supported." (Moynihan, p. 16)
 4. "You do need some fairly sophisticated clinical work, clinical psychology of the kind Brunel is carrying out in Harvard--that is observing child behavior and noting patterns. ...That kind of work needs to be supported." (Moynihan, p. 16-17)
 5. (NIE) "...Can review the vast array of non-school inputs to the learning process. It can collect and massage data on the effects and effectiveness of things such as media, nutrition, drugs, family background, and environments on learning." (Allen, p. 83)
 6. "You need some just plain very good cost accounting of the actual operation of educational experiments. We change this input. What happens to the output? You just observe the actual experience of the day care center, or whatever the facility is. I would like to analyze it by the methods of regression analysis, and so forth, which we are pretty good at." (Moynihan, p. 17)
 7. (NIE) "...can concentrate on a particular student's growth over several years, or a particular teacher's performance with a particular situation. Most research now focuses on the ideal state--finding the best model, the best curriculum, the best training. An effort must be made to produce more situational specifications." (Allen, p. 83)
- IV. Building an effective R&D system (Most of these have also been listed under "Goals, Needs, and Problems of Education")
1. "...Adopt for educational R&D some of the multi-year and no-year funding arrangements that have proved so successful in the budgets of AEC, NASA, and DOD. Congressional support should be assured over a long period of time." (Bailey, p. 51) (The need for long-term funding was mentioned many times in the testimony.)
 (NIE) "can provide a sustained and permanent research base which will generate longitudinal and replicable studies." (Allen, p. 83)
 2. (Educational research) "is scattered around and 'bootlegged' in a dozen places (in Federal government).... I would bring it together and put it under the charge of a man who will have a coherent strategy." (Moynihan, p. 29)
 "Coordinate R&D activities among Federal agencies..." (Levien, p. 203)
 "...Try to rationalize and bring greater cohesion to what is going on in universities and in R&D centers..." (Bailey, p. 59)